SB

STATISTICAL BULLETIN

Vol 65 No 3 Jul-Sep 1984

2 **Drinking and Driving.** Plus an editorial by John Volpe, Chairman, National Commission Against Drunk Driving, emphasizing nationwide priorities to prevent and reduce alcohol-related accidents and deaths.

8 **Regional Variations in Mortality: Diseases of the Heart.** And a related editorial by Dr. Manning Feinleib, Director, National Center for Health Statistics, pointing to the need for further investigation to ensure the continued decline in deaths from heart disease.

18 **Gains in U.S. Life Expectancy.** The trend is up. Latest data reveal that people are living longer than ever before.

Metropolitan Insurance Companies

Contents

1 From the Editor's Desk

2 Drinking and Driving

6 Preventing DUI in Adolescents

7 Nationwide Priorities To Prevent Drunk Driving
John A. Volpe, Chairman, National Commission Against Drunk Driving

8 Regional Variations in Mortality From Diseases of the Heart

15 Decline in Heart Disease Deaths: Progress and Puzzle
Manning Feinleib, M.D., Dr. P.H., Director, National Center for Health Statistics

16 Capsule Briefs

18 Gains in U.S. Life Expectancy

24 Health and Safety Education Materials
Back Cover/Historical Perspectives

John J. Creedon
President and
Chief Executive Officer

Paul S. Entmacher, M.D.
Vice-President and
Chief Medical Director

William R. Cunnick, Jr., M.D.
Vice-President and
Deputy Chief Medical Director

Clarence E. Pearson, M.P.H.
Assistant Vice-President
Health and Safety Education

Charles B. Arnold, M.D., M.P.H.
Editor in Chief

Joan W. Parks
Managing Editor

Bianca Cody, Stanley Kranczer
Contributing Editors

Hazel Forbes
Associate Contributing Editor

Ida Isaac
Editorial Assistant

Doris Bressler
Director Health Communications

Stanley Kranczer
Business Manager

Alvera Cleary
Circulation Manager

Joseph Haber
Art Direction

Stanley Volinsky
Graphic Design

The Statistical Bulletin (ISSN 0741-9767) Copyright 1984 Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010. Published four times a year by Metropolitan Life Insurance Company. John J. Creedon, President and Chief Executive Officer; Robert Schwartz, Chairman; Harry Kamen, Senior Vice-President and Secretary; Arthur G. Typermass, Senior Vice-President and Treasurer. Printed in U.S.A. Subscriptions: U.S., its territories and Canada, $5.0 for one year (U.S. currency). Outside U.S. and Canada add $1.0 for postage. Send to: Statistical Bulletin, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010.

Postage paid at New York, N.Y. Postmaster send address changes to above address.

Letters will be published at the discretion of the editor as space permits and subject to editing and abridgment. They should be typewritten double-spaced. Send to:
Statistical Bulletin 16UV
Metropolitan Life Insurance Company
One Madison Avenue, New York, N.Y. 10010

From the Editor's Desk

Have you ever known anyone who became the victim of a drunk driver? It is highly probable because the tragic consequences of drunk driving—crash injuries, deaths, permanent disabilities—have affected almost all Americans. Unfortunately, despite our understanding of drinking as a major factor in auto accidents, *in*action has, until recently, characterized our national response. In the lead article of this issue, *Statistical Bulletin* analyzes some grim demographic facts about alcohol's likely role in an estimated 230,000 auto crash injury deaths in the United States since 1974.

SB also draws your attention to the editorial by John Volpe, Chairman, National Commission Against Drunk Driving, that summarizes the challenge of this far-reaching problem, and provides guidelines for an effective community response. As he reminds us, the prevention of drunk-driving deaths and injuries will require *every* American—especially teenagers, young adults and their parents—to participate in action programs, promote better education, and enforce strict behavioral codes for auto use on any social occasion associated with alcohol consumption.

This community emphasis is critical to developing workable programs because governmental solutions are uncertain for two reasons. Social problems involving self-management disorders like drinking do not yield readily to statutory mandates. And having once tried and failed with national prohibition as a constitutional amendment, we know that alcohol will remain accessible to drivers. Accordingly, we must find ways —as individuals, as families, and as communities—to permit its social use in less harmful ways.

Another recent public health quandary in America has a brighter side: the causes of the 15-year decline in the coronary heart disease death rate. In this issue *SB* looks at heart disease deaths and their patterns of variation by national region to determine whether causal clues can be found. Why, for example, should persons residing in Atlantic states be at such greater heart disease death risk than those living in states bordering the Pacific? Regrettably, answers to such questions are not easily provided.

In his guest editorial, Dr. Manning Feinleib reminds us that research issues abound in the heart disease area as death rates decline. Dr. Feinleib, a highly regarded cardiovascular epidemiologist who serves as Director of the National Center for Health Statistics, was formerly the Chief of Epidemiology, National Heart, Lung and Blood Institute, and for many years was a leading collaborator in the Framingham Heart Disease Surveillance Study.

Life expectancy is another health statistic of great interest. In this issue *SB* analyzes findings from the 1983 U.S. life table. For personal or professional reasons, you may wish to check the life expectancy of recent births, or even see how gender and age groups (such as yours) were faring last year. Happily, though the annual increases are small, their direction looks optimistic.

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

More than 10 million adults in the United States are either alcoholics or have a serious problem directly related to the abuse of alcohol. In addition, between 3 and 3.5 million youths aged 14-17 are considered to be problem drinkers. The abuse of alcohol adversely affects health, significantly increases mortality from many diseases, and may be responsible for up to 15 percent of the nation's health care costs[1]; but its most alarming consequence is its relationship to fatal traffic accidents. Drunk driving is responsible for more deaths among adolescents and young adults than any other cause.

Motor vehicle accidents are the leading cause of mortality among teenagers and young adults under 25, claiming more lives than all other causes of deaths combined, and about four times the number of lives lost from the next leading cause of death (homicide). The figure on page 5 compares, by age, the percent distribution of motor vehicle accident fatalities with that of the United States population. It clearly illustrates that the representation of the 15-24 age group in motor vehicle fatalities is nearly twice its representation in the population. Moreover, a recent study by the Insurance Institute for Highway Safety[2] found that, per 100 million miles driven, far greater numbers of teenage drivers are involved in fatal passenger vehicle crashes than are older drivers. This study also showed that, at ages 16 through the early 20s, male drivers are involved in fatal crashes more than twice as often as female drivers.

Role of Alcohol in Fatal Traffic Accidents

Recent estimates of alcohol involvement in traffic accidents have been made by the National Center for Statistics and Analysis (NCSA) of the National Highway Traffic Safety Administration (NHTSA). The NCSA maintains and analyzes two national data systems: the Fatal Accident Reporting System (FARS) and the National Accident Sampling System (NASS). In both FARS and NASS, an accident is designated as alcohol involved if (1) any driver or pedestrian in the crash is tested and has a positive blood alcohol concentration (BAC) result ≥ .01, or (2) any driver in the crash is cited for driving while intoxicated or under the influence of liquor, without a BAC test result, or (3) the police accident report indicates that a driver or pedestrian had been drinking or that there was alcohol involvement without the benefit of a BAC test result. Previous studies have shown that when there is an alcohol involvement designation on a police report—criteria (2) and (3)—about 95 percent of the drivers have subsequent positive BACs.[3]

	1980	1981	1982
Percent Driver Fatalities With			
BAC ≥ .01	62%	60%	59%
BAC ≥ .10	50%	49%	49%
Percent Fatal Accidents With Alcohol Involvement	55%	57%	58%
Number of Persons Killed in Alcohol-Involved Crashes	28,000	28,100	25,600

Unfortunately, many drivers in fatal and nonfatal crashes are not given BAC tests even when alcohol abuse/involvement is suspected, so that resulting figures under report the true alcohol relationship in accidents. However, 15 states in the 1980 FARS, 17 in the 1981 FARS, and 14 in the 1982 FARS had fairly complete alcohol reporting on *fatally injured drivers;* between 80 and 90 percent of the driver fatalities in these states were tested for alcohol. NCSA made estimates of alcohol

involvement for the entire nation by extrapolating from these states, assuming that they were fairly representative of the United States[3]. Using this method, results for 1980, 1981 and 1982 are given in the table on the opposite page.

In summary, according to NCSA's latest estimates, 49 to 50 percent of the *fatally injured drivers* who are tested are found to have BACs ≥ .10 (INTOXICATED), and 59 to 62 percent have BACs ≥ .01 (ALCOHOL INVOLVEMENT); 55 to 58 percent of all *fatal accidents* involve alcohol. The slight decrease in alcohol involvement in driver fatalities from 1980-82 could be indicative of a trend in that direction, since driver

fatalities are based on results of BAC tests. On the other hand, the slight increase in alcohol involvement in fatal accidents may be a reflection of increased police awareness and the reporting of alcohol involvement. The estimated number of persons (drivers, passengers, and pedestrians) killed as a result of alcohol-related crashes was 28,000 in 1980, 28,100 in 1981, and 25,600 in 1982. The drop between 1981 and 1982 was due, in part, to the 10 percent decrease in total motor vehicle fatalities that occurred between these two years—the largest decrease since the energy crisis and the subsequent mandatory 55-mile

"Drunk driving is responsible for more deaths among adolescents and young adults than any other cause of death."

speed limit of the early 1970s[4]. Figures from other studies exceed the NHTSA's estimate that 50 percent of drivers involved in fatal accidents are intoxicated at the time of the accident. A new study by the College of American Pathologists investigated medical examiners' records in four states over a period of one year and found that nine out of 10 fatal accidents may involve drunken drivers. They explained that their estimates were based on a sample of *all* drivers, not just those who were killed (as in the NHTSA's studies); they reported that in many fatal accidents, the drunken driver lived while the passengers or pedestrians died.

Role of Alcohol in Nonfatal Traffic Accidents
NASS estimates that in the years 1979, 1980 and 1981 an average of 17 percent of all nonfatal injury-producing traffic accidents were alcohol related. This is considered to be a conservative estimate because of the lack of complete BAC data on drivers in nonfatal accidents. The number of persons injured (drivers, passengers, and pedestrians) as a result of alcohol-involved crashes would be about 670,000 a year.

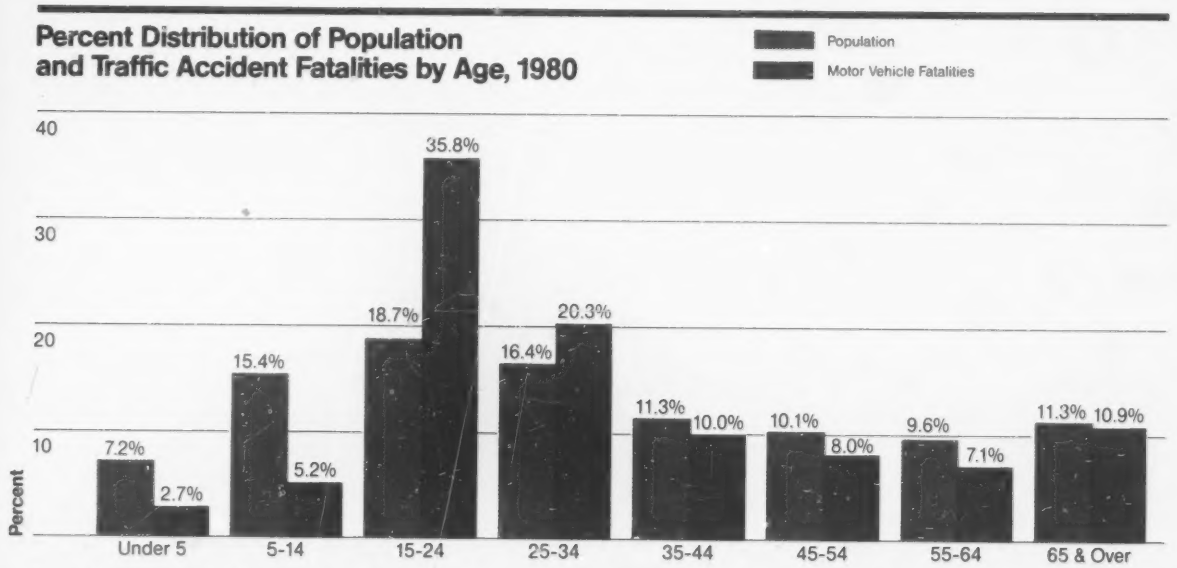
Alcohol Involvement by Driver Age
The following table presents alcohol-involved fatal accident rates for various driver age groups, based on the number of vehicle miles traveled by that age group[3]:

Driver Age	Alcohol-Involved Fatal Accidents Per 100 Million Vehicle Miles Traveled
16-17	4.39
18	4.61
19	4.44
20	3.38
21	4.08
22-24	3.10
25-44	1.50
45 & Over	0.67

This type of rate is considered by most researchers to be the best measurement of the motor vehicle hazard because it takes into account driving exposure (the extent to which motor vehicles are used by a particular driver age group). The table shows that 18-year-old drivers on the average are involved in 4.61 alcohol-related fatal accidents (where the 18-year-old was the drinking driver) for every 100 million miles traveled by drivers of that age. The table also indicates that 16- to 19-year-old drivers have the highest rates, followed by 20- to 21-year-old drivers; thereafter, the rate drops precipitously with advance in age. Such data are often cited by advocates for raising the legal drinking age to 21.

Other research has shown that there is a direct correlation between minimum age for purchasing alcohol and alcohol-involved crashes. A recent study[5] in New York State from 1978 to 1981 revealed that the highest rate of alcohol-related accidents was experienced by 18-year-old drivers. Now, a preliminary analysis of crash data[6] shows that the number of 18-year-old

Percent Distribution of Population and Traffic Accident Fatalities by Age, 1980



Source of basic data: Reports of the Bureau of the Census and the Vital Statistics Division, National Center for Health Statistics.

drinking drivers in fatal crashes *decreased by 42%* in the twelve-month period after the alcohol purchase age was raised to 19. A study by the University of Michigan Highway Safety Research Institute[7] reported that states which had raised the legal drinking age have shown an average decrease of 29 percent in motor vehicle accidents.

What is Being Done About the Problem of Drinking and Driving

Alarmed by the prevalence of alcohol involvement in motor vehicle accidents among the youth of our nation, both the public and private sectors of society are increasing their efforts to remedy the situation. In addition to maintaining and analyzing two national data bases, the National Highway Traffic Safety Administration also provides assistance and training to state and local governments in the design and implementation of laws against drunk driving.

The Presidential Commission on Drunk Driving has recommended in its final report that all states immediately raise the minimum age for buying alcohol to 21, and even suggested that federal legislation be enacted that would cut federal highway aid for any state that does not comply. Thus far, 19 states have passed laws setting 21 as the legal minimum age for purchasing alcohol.

"Study shows that nine out of 10 fatal accidents may involve drunken drivers."

The Department of Health and Human Services sponsored a national Conference for Youth on Drinking and Driving, held in March 1983 and attended by high school student delegates and school superintendents from across the country. The conference, led by students, featured an exchange of information on successful "don't drink and drive" programs run by students within their schools or in their communities. (An example of such a program is Students Against Drunk Driving (SADD), a peer-run community program started in Massachusetts, with several hundred chapters in 22 states.) The delegates returned home with active plans to work on positive peer

pressure programs at their own schools to persuade their peers not to drink and drive. The Department of Health and Human Services plans to hold similar conferences annually to mobilize *future* generations of students against drunk driving.

"Based on mileage, alcohol-related fatal accident rates are highest for 16-19-year-old drivers; next highest for those 20-21 years."

Ultimate responsibility for this problem must be accepted at the local level where attitudes toward drinking and driving are established and where the consequences of drunk driving are most acutely felt. Thousands of local task forces have been established across the country as a result of THE CHEMICAL PEOPLE—a community outreach campaign funded by Metropolitan Life Foundation and the Richard King Mellon Foundation to curb alcohol and drug abuse among adolescents. Hopefully, these task forces will make major contributions toward stemming the tragic loss of lives caused by teenage drinking and driving.

The Effectiveness and Costs of Alcoholism Treatment. Office of Technology Assessment, Congress of the United States, Washington, D.C., March 1983.

Insurance Institute for Highway Safety Status Report. Washington, D.C., February 18, 1984.

Tracking the Alcohol Involvement Problem in U.S. Highway Crashes. National Center for Statistics and Analysis, National Highway Traffic Safety Administration, 1983.

Accident death toll in 1982. *Statistical Bulletin* 64:10-12, Jan.-June 1983.

Califano J. The 1982 report on drug abuse and alcoholism. Warner, New York, 1982.

Youth Alcohol Study. Preliminary Findings. Division of Alcoholism and Alcohol Abuse, New York State, May 1984.

Wagnaar A. The raising of the legal drinking age in Michigan and Maine. National Institute on Alcohol Abuse and Alcoholism, 1981.

Preventing Driving Under the Influence in Adolescents

Safe-drive programs are being conducted in communities across the country to help adolescents avoid driving when they are under the influence (DUI) of alcohol. Some are sponsored by Students Against Drunk Driving as well as other concerned groups. "Drive-a-Teen"* in Chapel Hill, N.C., is an example. It began in the spring of 1981 as an emergency transportation service. The idea originated when a local student was killed in a traffic accident involving DUI. Students and adult advisers have worked together as colleagues. The community, the parents and the students assumed collective responsibility for preventing DUI. A key element is the anonymity extended to the person given a ride.

"Drive-a-Teen" has become more than chauffeuring for intoxicated adolescents. During 1981-82 student and adult members organized a seminar on problems with alcohol. Out of this grew *Peer Education*, a permanent part of the program. A team of peer educators offer instruction in junior high health education classes and high school driver education classes about drinking and driving. Peer educators receive an initial 10-hour instructional skills training session. The program hopes to promote new community norms among adolescents about responsible decision-making and drinking.

Some fear that the safe-ride services may encourage teenagers to drink at parties because someone will "bail them out." However, it is estimated in Chapel Hill, the majority who seek help would likely ride home with an unsafe driver.

*S.W. Spalt, *Traffic Safety* 84(3): 6-7 and 25-26, 1984.

Guest Editorial

Nationwide Priorities to Prevent Drunk Driving

The picture of America reflects the good life—physical fitness, economic opportunity, mobility, long life, and more. However, upon closer examination, this wholesome image seems to blur. Such scrutiny is revealing, too, because it casts a shadow on a rich national resource, our young people.

The advances in health services have been truly remarkable, with exceptional current improvements being demonstrated in the area of accident care and trauma management. Such life-saving techniques are academic, however, when the crash victim is dead-on-arrival. Unfortunately, motor vehicle accidents are the leading cause of death for those aged 15-24. And alcohol has been shown to be a major factor in the majority of these cases.

Defining the Problem

The drunk driving problem is not confined to youth since it cuts across all ages, classes and cultures without distinction. Any indictment for the annual toll of alcohol-related deaths must be weighed against the prevalent societal attitude that *drinking and driving is socially acceptable.*

The question arises, then, how to respond to the drunk driving issue. A good case can be made for stricter laws, greater enforcement, and swift adjudication. As important as stronger legislation is at the local and state levels, statutes, for the most part, must be regarded as the short-term response. Acceptable solutions must go much deeper if we are to sustain the national resolve to reduce alcohol-related tragedies.

Critical Need for Long-Term Education

In a heartening concert of action during the last three years, the insurance, motor vehicle and alcohol industries, together with the media, public safety leaders, elected officials and grass roots citizen groups, have heightened the public awareness of this issue. The insistent call of all these concerned voices is for reduction of the frightening carnage on our highways. No longer will the casual attitude be tolerated that terms drunk driving deaths as "acceptable homicides." Victims' rights will be given priority with the same zeal that offenders' rights are protected. All of which brings to the forefront the critical need for long-term education programs and treatment measures.

The Presidential Commission on Drunk Driving, in making its Final Report in December 1983, pointed out that all segments of community life must be engaged in the campaign to rid the highways of those choosing to drive after drinking. Laws alone will not guarantee the desired changes. Above all, at least a decade-long commitment will be needed to make *drinking and driving socially unacceptable.*

Solution: Coordinated Efforts

To assist in monitoring existing and planned drunk driving programs by the public and private sectors, the Presidential Commission recommended the creation of a non-profit, non-governmental organization. The new National Commission Against Drunk Driving has been established in affiliation with the National Safety Council. In its own implementation plan, this Commission has set recommendations to receive top priority, including public education with emphasis on youth; age 21 for purchase and possession of all beverage alcohol; creation of task forces; safety checkpoints; enactment of .10 blood alcohol concentration as illegal per se (now in 41 states); prompt license suspensions for driving under the influence; and mandatory sentences.

This is a large order and will require the coordinated efforts of all organizations and a concerned citizenry. Only such an all-out drive against drunk driving will insure for millions of Americans the right to travel the nation's highways in safety and without fear.

John A. Volpe, Chairman
National Commission Against Drunk Driving

REGIONAL VARIATIONS IN MORTALITY FROM DISEASES OF THE HEART

Since 1968 substantial progress has been made in reducing mortality from heart disease in the United States. The age-adjusted death rate steadily declined from 270.0 per 100,000 population that year to 202.0 in 1980—or by 25.2 percent—and to a provisional value of 190.8 per 100,000 in 1982. This favorable trend is due largely to changes in health behavior caused by a gradual public awareness of the detrimental effects of hypertension, smoking, and the beneficial aspects of a low-fat, low-cholesterol diet and prudent amounts of exercise.

Additionally, improved management of high-risk persons, and advances in surgical techniques and medical research (such as the recent results from the federal study confirming the negative relationship of high lipid levels and heart disease), have also contributed to the decline. Notwithstanding, heart disease is still by far the leading cause of death in the United States, accounting for about 760,000 deaths in 1982—or about 40 percent of all fatalities.

Regional Variation—Males

Heart disease death rates vary considerably by geographic region. The diseases of the heart category is broad, including rheumatic fever and rheumatic heart disease, hypertensive heart disease, hypertensive heart and renal disease, ischemic heart disease (which comprises almost three-fourths of the total), and other forms of heart disease. (Codes 390-398, 402, and 404-429 in the Ninth Revision, International Classification of Diseases.)

An analysis of death rates from diseases of the heart for the white population aged 35-74 revealed that for males, the age-adjusted mortality rate ranged from a low of 403.4 per 100,000 in the Mountain division of the nation to a high of 528.9 per 100,000 in the Middle Atlantic division—a disparity of 31 percent. Compared with a death rate of 480.9 per 100,000 for the nation as a whole, the mortality rates in the Pacific and West North Central divisions were also significantly lower. Table 1 presents the ranking of the age-adjusted death rates for white males by geographic area.

Table 1

Age-Adjusted Mortality Rate*
Diseases of the Heart
White Males Aged 35-74
United States, 1980 (per 100,000)

Geographic Division	Rate
Mountain	403.4
Pacific	427.2
West North Central	433.4
New England	466.3
UNITED STATES	480.9
South Atlantic	497.6
West South Central	512.8
East North Central	520.9
East South Central	521.1
Middle Atlantic	528.9

*See Source B and A on pages 13 and 14 for states that comprise the geographic divisions.

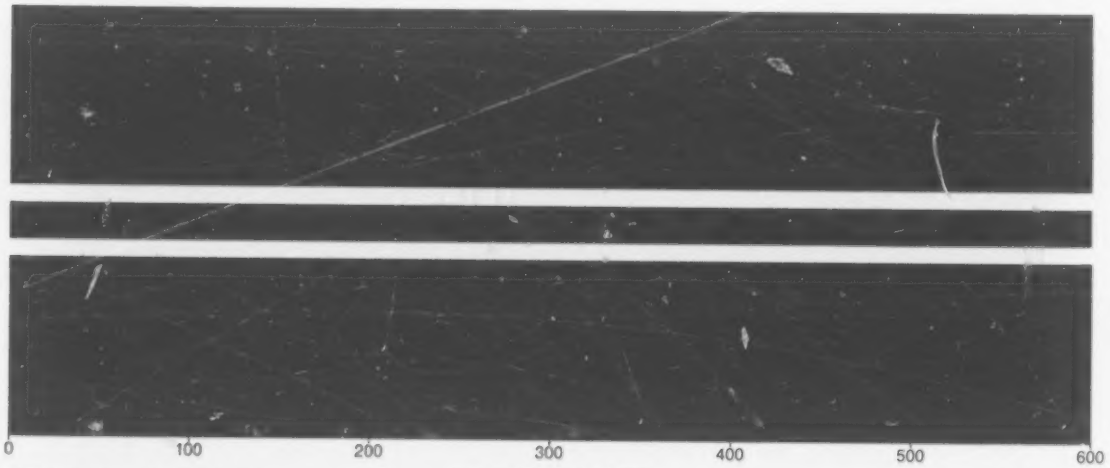
Regional Variation—Females

Among white females aged 35-74, seven of the nine geographic divisions recorded age-adjusted mortality rates less than the United States average. Women who resided in the West North Central states experienced the lowest death rate from heart disease followed by those living in the Mountain and Pacific divisions. On the other hand, the highest mortality rate among females occurred in the Middle Atlantic states, namely 211.7 per 100,000—or 37 percent greater than that registered in the West North Central states. Table 2 shows the relative standings of white female mortality from diseases of the heart.

Figure A-States With Highest and Lowest Mortality From Diseases of Heart

White Males Aged 35-74, United States, 1980

Age-Adjusted* Death Rate per 100,000



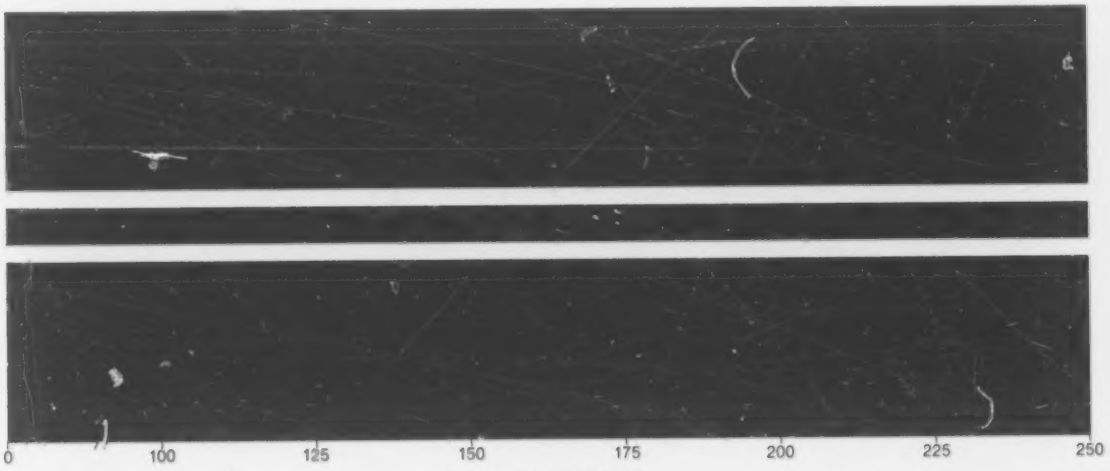
*Adjusted on basis of age distribution of the United States total population, 1940.

State-by-State Comparisons

On a state-by-state basis, age-adjusted mortality from diseases of the heart among white males was highest in West Virginia, Kentucky, South Carolina, Louisiana and Pennsylvania. All experienced death rates above 530 per 100,000. However, six states reported age-adjusted death rates approximately 20 percent or more below the national average—Washington, Idaho, Utah, Colorado, New Mexico and Hawaii. Figure A presents white male death rates for the five states with the highest and lowest mortality from diseases of the heart.

The comparable analysis for white females aged 35-74 is shown in Figure B (Page 10). Thus, as is evident, the states with the highest age-adjusted death rates for women were West Virginia, New York, Pennsylvania, Kentucky and Delaware. Mortality rates in Ohio and Louisiana were also over 200 per 100,000. In 1980 the lowest female mortality from heart disease was reported in Hawaii, New Mexico, North Dakota, the

Figure B-States With Highest and Lowest Mortality From Diseases of Heart
White Females Aged 35-74, United States, 1980
Age-Adjusted* Death Rate per 100,000



*Adjusted on basis of age distribution of the United States total population, 1940.

District of Columbia and Alaska. All of these areas registered death rates under 140 per 100,000.

Regional Mortality by Age

Mortality from heart disease increased substantially with advance in age—although at a decreasing pace. For the United States as a whole, the death rates among white men more than quadrupled between the age groups 35-44 and 45-54. Between age groups 45-54 and 55-64, the death rates almost tripled. At ages 65-74, the rate was more than twice that of those 10 years younger.

Among white women, mortality from this major cause of death also quadrupled between the two youngest age groups and then more than tripled for each of the other two successive ten-year age brackets. State death rates exhibited much the same pattern. It is significant that heart disease death rates among females range, in most states, from one-fifth those of males at ages 35-44 to about half those of males at ages 65-74. Overall, the age-adjusted death rates of females were about two-fifths those of males.

Among white males aged 35-44, death from heart disease was lowest in the Mountain division of the country—about 52 per 100,000. Death rates of this magnitude or less were reported in

> "Overall, the age-adjusted death rates of females were about two-fifths those of males."

seven states—Connecticut, Oregon, New Hampshire, New Mexico, Washington, Colorado and Montana. The highest regional death rate for men in this age group—around 77 per 100,000—was reported in the East South Central states and rates of more than 80 per 100,000 were experienced in Kentucky, Mississippi and Arkansas.

Among white women aged 35-44, the lowest mortality from heart disease occurred in the New England division—11.5 per 100,000—while the highest death rate—22.2 per 100,000—was registered in the West South Central states. By state, mortality ranged from a low of 7 per 100,000 in Connecticut to a high of around 27 per 100,000 in Montana and Arkansas.

"Among white females aged 35-74, seven of the nine geographic divisions recorded age-adjusted mortality rates less than the U.S. average."

Among males aged 45-54, the lowest mortality in 1980 was registered in the Mountain division—228.7 per 100,000—with New Mexico experiencing a rate of just 158.5 per 100,000. On the other hand, the highest rates were found in West Virginia, Kentucky and South Carolina—all with mortality exceeding 320 per 100,000. The Middle Atlantic and East South Central states reported the highest mortality rates—over 300 per 100,000. For women aged 45-54, the lowest rate—37.9 per 100,000—was recorded in North Dakota while the highest rates—nearly 100 per 100,000—were those in Vermont and West Virginia. Mortality was highest in the East South Central and East North Central states and lowest in the West North Central division.

At ages 55-64, the lowest mortality from diseases of the heart among men occurred in the Mountain division—635 per 100,000. The states with the lowest death rates were New Mexico, Hawaii and Idaho. Among the geographic divisions, the highest mortality was found in the Middle Atlantic and East South Central areas where rates in excess of 800 per 100,000 were reported. The states that experienced the highest rates in 1980 were West Virginia, Kentucky, Louisiana and South Carolina—over 850 per 100,000.

Among women aged 55-64, the lowest mortality was registered in the Mountain division—213 per 100,000—closely followed by that in the West North Central and Pacific divisions. In both areas the rates were about 216 per 100,000. New Mexico and Hawaii reported rates of about 160 per 100,000 while Washington, Nebraska, North Dakota, the District of Columbia and Minnesota experienced rates of less than 200 per 100,000. By state, West Virginia, Delaware and New York registered the highest mortality rates from diseases of the heart—over 300 per 100,000. By geographical division, the Middle Atlantic region had the highest death rate—293 per 100,000.

The lowest mortality among males aged 65-74 was reported in the Mountain division—1,455 per 100,000. Hawaii registered a death rate of only 974 per 100,000 while in New Mexico mortality was also very low—1,185 per 100,000. The states with the highest rates—2,000 or more per 100,000—were South Carolina and West Virginia. In the Middle Atlantic states, the mortality rate was 1,952 per 100,000.

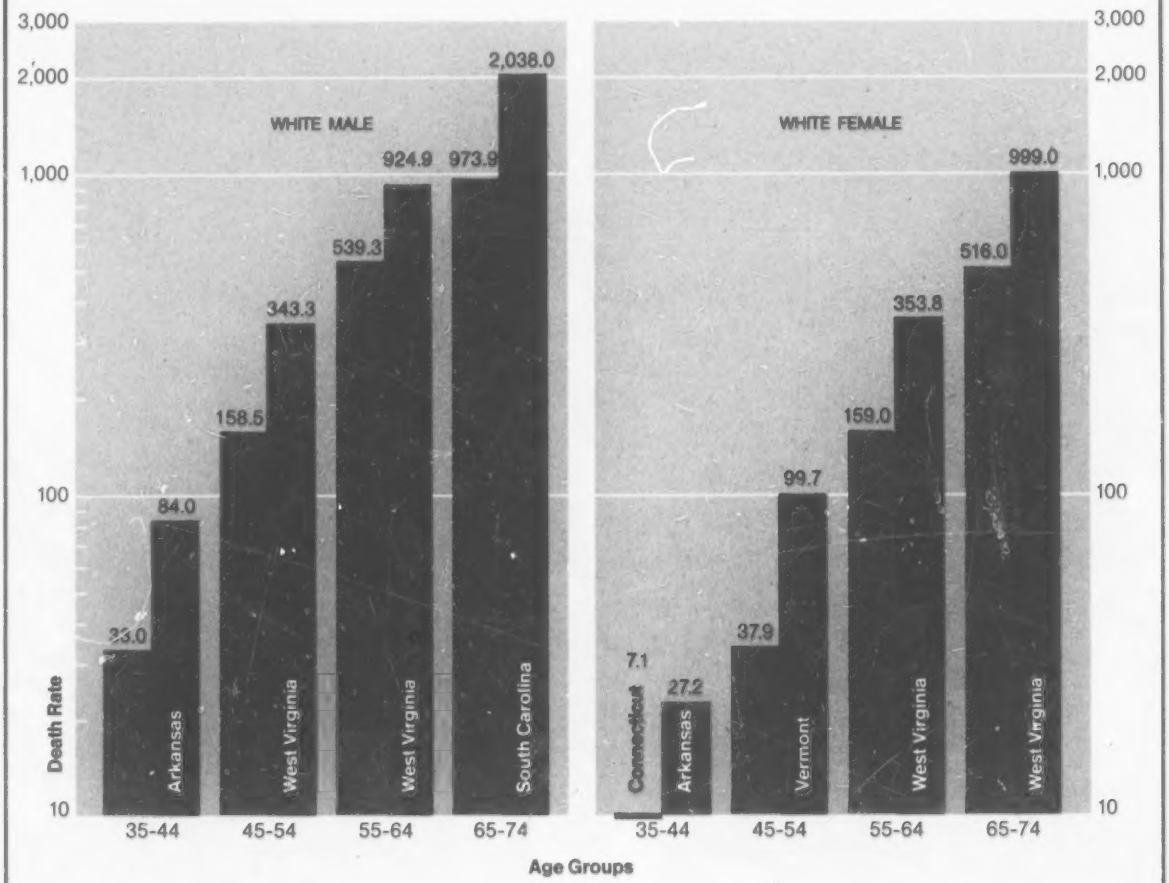
"Mortality from heart disease has fallen dramatically since 1968."

For women aged 65-74 the lowest mortality (681 per 100,000) occurred in the Mountain division. Hawaiian women experienced a death rate of 516 per 100,000, whereas in West Virginia the mortality rate was almost twice as high—999 per 100,000. Among women, the Middle Atlantic states, as a group, reported the highest mortality rate—962 per 100,000.

Figure C on page 12 shows for white males and white females separately the states with either the most favorable or the least favorable mortality experience for each of the four age-specific groups. In addition, Tables 3 and 4 show all the age-specific mortality rates from diseases of the heart for each state and the District of Columbia.

Clearly, mortality from heart disease has fallen dramatically since 1968. However, definitive reasons for the decline and for the existence of significant geographic mortality disparities are not

Figure C-States With Highest and Lowest Mortality From Diseases of Heart
White Population Aged 35-74, By Sex, United States, 1980
Death Rate per 100,000



known. Further research into the causes of mortality and morbidity from heart disease among different regions' population groups is indicated. It is hoped that such research will lead to a better understanding of the etiology of heart disease and, in conjunction with what is already known about biological risk factors, environmental influences and life styles, will result in public health programs that further abet mortality decline.

Table 3—Mortality From Diseases of Heart Among White Men
United States—1980

Area	Death Rate per 100,000 Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
UNITED STATES	480.9	63.8	276.0	740.9	1747.8
NEW ENGLAND	468.8	59.7	258.1	731.6	1721.4
Maine	459.9	66.3	246.9	810.2	1529.2
New Hampshire	471.3	43.2	251.5	759.8	1758.4
Vermont	488.9	70.2	234.7	761.9	1858.6
Massachusetts	488.6	63.9	277.4	737.3	1810.8
Rhode Island	490.9	65.8	241.6	836.5	1746.7
Connecticut	426.4	51.6	238.6	650.9	1588.8
MIDDLE ATLANTIC	528.9	69.8	300.3	802.2	1951.8
New York	527.5	71.3	300.3	799.1	1941.3
New Jersey	524.4	69.4	297.6	782.1	1957.2
Pennsylvania	533.3	67.9	302.0	818.1	1962.2
EAST NORTH CENTRAL	499.9	65.2	281.1	755.5	1858.6
Ohio	514.9	66.5	294.5	762.1	1930.4
Indiana	494.2	70.9	287.0	766.8	1763.0
Illinois	512.2	67.0	284.9	783.8	1895.1
Michigan	499.3	62.0	280.4	763.7	1850.7
Wisconsin	448.1	57.8	236.0	648.4	1753.9
WEST NORTH CENTRAL	433.4	55.3	241.9	648.3	1629.8
Minnesota	419.3	55.7	224.2	641.1	1571.9
Iowa	440.4	58.2	262.4	635.8	1648.6
Missouri	446.8	53.6	241.3	666.2	1713.4
North Dakota	445.9	58.0	230.3	727.1	1619.3
South Dakota	481.9	58.5	284.9	758.0	1720.3
Nebraska	416.2	52.6	225.9	611.4	1601.1
Kansas	413.7	54.8	249.2	609.9	1520.5
SOUTH ATLANTIC	487.6	65.7	291.0	774.6	1702.5
Delaware	519.9	53.7	279.7	800.1	1980.0
Maryland	488.7	56.0	279.1	744.5	1818.6
District of Columbia	462.7	†	224.2	815.7	1691.1
Virginia	498.0	54.5	279.5	764.9	1862.3
West Virginia	581.0	77.1	343.3	924.9	2037.5
North Carolina	521.0	69.1	307.4	818.9	1845.8
South Carolina	559.4	68.8	329.4	855.9	2038.0
Georgia	524.5	72.7	288.5	839.7	1875.0
Florida	436.1	69.3	274.1	696.1	1454.4
EAST SOUTH CENTRAL	510.1	76.7	306.8	800.6	1769.0
Kentucky	561.6	81.7	337.8	883.5	1952.3
Tennessee	492.6	70.5	305.0	775.1	1694.8
Alabama	477.4	76.2	277.3	734.0	1692.6
Mississippi	507.9	83.0	304.6	815.6	1713.9
WEST SOUTH CENTRAL	488.8	68.6	288.1	757.2	1739.9
Arkansas	515.2	84.0	319.2	803.6	1753.7
Louisiana	537.3	79.6	302.0	867.1	1879.3
Oklahoma	490.4	64.0	272.7	773.3	1777.0
Texas	470.9	64.3	283.0	715.5	1691.3
MOUNTAIN	403.4	52.1	228.7	634.7	1454.7
Montana	430.2	33.0	266.1	680.0	1557.7
Idaho	397.0	65.0	214.4	577.3	1496.8
Wyoming	449.8	72.0	252.2	651.4	1682.8
Colorado	385.8	38.9	218.7	605.0	1426.6
New Mexico	324.2	40.9	158.5	539.3	1185.4
Arizona	423.5	60.1	250.1	673.9	1475.0
Utah	394.8	57.6	224.0	631.2	1388.2
Nevada	464.5	72.3	264.0	729.2	1640.8
PACIFIC	427.9	54.5	242.8	658.1	1569.7
Washington	401.7	40.3	225.3	611.5	1522.2
Oregon	422.3	50.8	243.5	692.1	1478.2
California	435.3	58.5	246.2	664.1	1599.5
Alaska	452.0	†	246.7	696.6	1729.2
Hawaii	321.7	†	228.7	542.7	973.9

*Adjusted on basis of age distribution of the United States total population, 1940.
†Rates not shown—10 or less deaths.

Source of basic data: Mortality figures from Division of Vital Statistics, National Center for Health Statistics—rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

Table 4—Mortality From Diseases of Heart Among White Women

United States—1980

Area	Death Rate per 100,000 Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
UNITED STATES	181.6	16.9	72.8	251.3	804.3
NEW ENGLAND	175.9	11.5	67.3	243.6	800.7
Maine	187.5	†	56.1	268.6	873.7
New Hampshire	183.9	†	79.6	241.8	837.4
Vermont	194.2	†	99.7	298.0	800.4
Massachusetts	182.2	13.7	71.7	249.0	825.0
Rhode Island	177.2	†	61.2	244.1	809.6
Connecticut	154.5	7.1	57.0	218.3	709.7
MIDDLE ATLANTIC	211.7	17.1	78.2	292.9	961.6
New York	217.0	15.6	83.6	303.6	976.7
New Jersey	198.3	16.7	68.3	266.7	923.3
Pennsylvania	212.6	19.2	77.1	294.3	962.7
EAST NORTH CENTRAL	195.3	17.6	79.6	269.6	864.4
Ohio	203.6	18.9	81.5	285.7	895.3
Indiana	193.4	18.2	88.5	282.9	804.0
Illinois	198.3	19.8	81.9	258.4	895.5
Michigan	197.3	16.5	80.2	274.9	873.3
Wisconsin	168.5	11.3	57.8	233.4	782.2
WEST NORTH CENTRAL	154.7	13.3	57.8	216.2	694.8
Minnesota	143.2	11.9	50.6	199.8	652.1
Iowa	149.5	12.7	43.8	209.1	701.5
Missouri	172.4	14.6	73.0	236.1	762.6
North Dakota	133.4	†	37.9	197.1	624.7
South Dakota	142.8	†	48.0	221.8	625.3
Nebraska	142.1	†	53.0	193.4	649.3
Kansas	159.8	18.0	67.5	228.4	677.8
SOUTH ATLANTIC	170.6	17.0	68.8	245.1	736.2
Delaware	203.8	†	64.7	324.4	888.5
Maryland	199.1	19.5	72.2	271.9	903.1
District of Columbia	134.7	†	†	199.5	615.1
Virginia	179.6	13.6	59.0	246.1	840.0
West Virginia	237.3	23.7	97.1	353.8	999.0
North Carolina	175.8	14.0	72.8	251.6	765.5
South Carolina	190.2	23.7	68.2	251.6	863.9
Georgia	181.8	19.6	75.7	268.7	762.3
Florida	140.8	15.0	61.5	201.1	595.1
EAST SOUTH CENTRAL	181.0	18.2	80.0	249.4	781.7
Kentucky	208.1	20.8	90.6	294.5	889.7
Tennessee	172.0	13.6	74.2	248.7	738.6
Alabama	167.9	21.8	81.8	202.5	740.2
Mississippi	173.2	17.8	70.2	247.2	748.1
WEST SOUTH CENTRAL	178.6	22.2	75.9	246.2	765.5
Arkansas	168.2	27.2	78.2	209.9	723.2
Louisiana	203.4	21.7	86.5	286.7	872.2
Oklahoma	173.7	15.3	73.0	244.3	757.3
Texas	175.5	23.1	73.5	243.2	749.4
MOUNTAIN	158.1	17.7	71.8	212.5	681.2
Montana	171.6	26.5	70.8	250.3	703.6
Idaho	155.2	†	68.0	208.7	678.0
Wyoming	186.0	†	61.7	214.1	929.8
Colorado	160.2	21.1	68.7	210.9	698.7
New Mexico	130.2	†	57.3	159.0	609.6
Arizona	156.6	16.5	80.2	213.5	650.6
Utah	149.7	†	69.3	213.4	632.4
Nevada	187.6	†	90.6	250.9	793.5
PACIFIC	163.5	15.1	66.8	216.6	737.5
Washington	151.9	10.8	61.2	191.9	712.3
Oregon	151.2	8.3	62.1	225.5	655.4
California	168.1	16.9	69.1	220.9	756.0
Alaska	138.9	†	†	209.6	656.3
Hawaii	122.0	†	†	162.9	516.0

*Adjusted on basis of age distribution of the United States total population, 1940.
†Rates not shown—10 or less deaths.

Source of basic data: Mortality figures from Division of Vital Statistics, National Center for Health Statistics—rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

Decline in Heart Disease Deaths: Progress and Puzzle

Since the mid-1960s, the age-adjusted death rates from diseases of the heart have fallen by nearly one-third. Although this improvement is gratifying, the reasons behind it remain obscure. It is not at all clear, for example, whether the decline has been accompanied by a corresponding decrease in the incidence of new cases, or whether it is due to improvements in medical care and a lowering of the case fatality rate.

Incidence and Prevalence

Indeed, national estimates of the incidence and prevalence of diseases of the heart have steadily increased since 1968. For example, the National Hospital Discharge Survey reported that the short-stay hospital discharge rate for diseases of the heart for men ages 45 to 64 was 19.4 per 1,000 population in 1965 rising to 34.0 per 1,000 in 1980—an increase of 75 percent. Similar increases were observed for older men and for women.

As reported in the National Health Interview Survey, the prevalence of heart disease at ages 45 to 64 increased from 55 per 1,000 persons in 1960 to 123 per 1,000 persons in 1981—an increase of 124 percent.

The *apparent* increase of heart disease events may be due to a wide variety of factors including improved and earlier diagnosis, more recurrent events, and increased utilization of health services. Likewise, the increased prevalence rates may reflect improved survival, improved patient awareness of their heart conditions, and changes in the survey methodology and questionnaire validity.

Clues to Future Investigation

The information base is meager for quantifying the effects of factors influencing mortality and morbidity. An examination of the geographic variation in heart disease mortality may suggest future avenues of investigation. For example, earlier studies have shown that heart disease mortality by county correlates significantly with the mean altitude of the region, and to a somewhat lesser extent with measures of water hardness. It is not known, however, whether the extremes in variation documented in the accompanying article can be related to differences in availability or quality of medical care, to regional differences in the incidence of disease or to differences in any of the known cardiovascular risk factors such as cigarette smoking, hypertension and elevated serum cholesterol levels.

Improvement Not Uniform

Although all states and regions have shown improvements in heart disease mortality in the last 15 years, the rate of improvement has not been uniform in every area. West Virginia, for instance, in 1970, ranked in the second quartile of states for deaths from heart disease, but in 1980 was the highest ranking state for both men and women ages 35 to 74. Conversely, Connecticut, which in 1970 had heart disease death rates similar to most other Northeastern states, now has the lowest rates in the Northeast, comparable to those in the Mountain states.

Trends such as these are natural experiments in which the epidemiologist can investigate changes in economic conditions and personal life styles, community prevention programs and regional variations.

Monitoring and Further Research

Continued monitoring of heart disease mortality trends, coupled with research into possible influential factors should lead to an improved understanding of what actions will effectively ensure a continued decline in death from diseases of the heart.

To provide more accurate, timely and complete data for monitoring the health trends of the nation, the National Center for Health Statistics will be revising several of its surveys in the next few years. Hopefully, these surveys will be supplemented by expanded data gathered at the state and local levels to provide further insight into what's causing the gratifying decline in coronary heart disease mortality and to explain the regional variations.

Manning Feinleib, M.D., Dr. P.H.
Director
National Center for Health Statistics

CAPSULE BRIEFS

are timely literature selections with broad reader interest.

Horace Greeley Saw It Clearly

Ninety percent of the population growth of 23 million in the United States between 1970-79 occurred in southern and western states. For the first time in U.S. history, the Sun Belt states are home to the majority of Americans. California gained the most (3.7 million). The no-growth states were in the Middle Atlantic and lower New England regions. In the West the population is younger and more highly educated than that of other regions. (*Population Residence and Home Ownership—Data Track 12*, American Council of Life Insurance, January 1984, 1850 K Street, N.W., Washington, D.C. 20006)

What Is (α) Risk?

In public health a *risk* is a straightforward concept based on the probability of an event (e.g., illness or death) resulting from a specific exposure (e.g., ionizing radiation). Generally, however, Americans' attitudes about risk are far more complex, as pollster Lou Harris recently discovered. Government and industry were perceived by those surveyed as demonstrating inadequate concern about consumer risk protection. Most Americans felt they had only limited control over risks: 57 percent said "some or hardly any," while only 34 percent were wholly confident and said they had a "great deal of control." While insurance was viewed as necessary, respondents had mixed feelings about it. (*Journal of Commerce*, February 29, 1984)

Hepatitis Virus and Liver Cancer

The web of evidence linking hepatitis virus (HV) to liver cancer (LC) grows increasingly stronger. In the United States, LC is an uncommon cancer. Worldwide, however, there are at least 250,000 new cases each year. There is extensive evidence of statistical association between HV and LC, but is it biological—i.e., causal—as well? In this review the authors effectively summarize the mounting, increasingly persuasive data that suggest plausible, causal mechanisms, including viral studies in laboratories and also in three animal species. Strategies for prevention are discussed as well as their implications for public health in regions of Asia, the Western Pacific and Sub-Saharan Africa. (M.J.P. Arthur, A.J. Hall, and R. Wright, *The Lancet*: 607-610, March 17, 1984)

Should You Join An HMO?

According to an investigative team in Minneapolis-St. Paul, the answer may depend on how heavily you used health services the previous year. In 11 working populations, medical care use and costs were studied the year before optional health maintenance organizations (HMO) enrollment was offered to the groups. Families enrolling in HMOs had less than 50 percent inpatient hospital days the year before the option was offered (470 vs. 994 per 1,000), than those electing to retain fee for service (FFS care); age-specific analysis further confirmed the finding. The authors suspect self-selection to "be an important determinant of differences in use and costs when comparing HMOs with FFS coverage." (M. Jackson-Beeck and J. H. Kleinman, *JAMA* 250 (20): 2826-2829, 1983)

New Government 'Lemon' List

If you want to avoid buying potentially large medical bills along with a shiny new car, check the recently published federal government list of crash injury test results on 1984 models. It may be helpful to know, for example, that in a few models it's actually much safer to be a passenger than a driver. For example, drivers are expected to fare much better in a Honda Civic CRX two-door sedan, whereas passengers are at lower risk in a Plymouth Colt Vista four-door station wagon. (*Status Report*, Insurance Institute for Highway Safety 19(4):4, 6-7, March 3, 1984)

Could Your Doctor Be A Surplus Specialty?

A recent reexamination of the 1980 estimates of physician surplus by GMENAC (Graduate Medical Educational National Advisory Committee) found some good news (the estimated 1990 physician surplus is now smaller), and some bad news (it's still 62,750 more than required). The problem isn't straightforward, however. Three physician specialty categories were defined: those with anticipated shortages (child and general psychiatry; physical medicine and rehabilitation; emergency and preventive medicine); those in "balance" (12), and those with surpluses (16). A category for which estimates were not made was nuclear medicine. Some "surplus" specialties and their percent of estimated requirement: urology (120), diagnostic radiology (135), orthopedic surgery (135), ophthalmology (140), thoracic surgery (140), obstetrics-gynecology (145), plastic surgery (145), allergy/immunology (145), rheumatology (175), cardiology (190), endocrinology (190), and neurosurgery (190). An accompanying editorial was entitled "A New Physician Supply Policy is Needed." None too soon it would seem. (M. A. Bowman *et al*, *JAMA* 250 (19): 2623-2627, 1983)

Speaking of Operations

Did you know that between 1970 and 1980 nearly one American woman per minute underwent tubal sterilization? According to a federal report, 5,526,000 of those surgeries occurred in that decade. That represented, for the period, 10.5 operations per 1,000 women 15-44 years old. Higher rates were found for black women, who were also slightly younger at time of surgery than whites (29 vs. 30 years). Geographically the higher rates were in the South, lower in the West. (Centers for Disease Control, *CDC Surveillance Summaries* 32 (Suppl. 3): 9SS-14SS, 1983)

An Alcohol Industry Headache

The alcohol industry has recently developed financial problems with significant public health and life style implications. Per capita consumption of most alcoholic beverages, after rising steadily during the 1970s, has leveled off or declined in recent years: liquor (since 1980); beer (down in 1982); wine (much slower growth since 1980). Observers link these changes to increased fitness and self-improvement movements. Further, some believe that public attitudes and behavior toward social drinking may have changed. Drunk driving campaigns by students and others and a new National Commission Against Drunk Driving have also increased public awareness and supported these new drinking trends. (*Wall Street Journal*, March 14, 1984)

GAINS IN U.S. LIFE EXPECTANCY

Life expectation for newborns in the United States reached a new high in 1983. According to preliminary life tables prepared by the Metropolitan Life Insurance Company, expectation of life at birth for the total resident population rose to 74.6 years—an increase of 0.1 years from 1982. The greater longevity was the same for infant boys and girls (0.1 years), rising to 70.9 and 78.3 years, respectively.

In the previous two years the gains in longevity were somewhat greater. Thus, between 1981-1982, the increment in life expectancy at birth was 0.4 years for the total population, 0.5 years for males and 0.3 years for females. Between 1980 and 1981 expectation of life for newborns rose by 0.4 years for the total population, 0.3 years for boys and 0.4 years for girls.

"Infant death rate fell to a record low of 10.9 per 1,000 live births."

Infant mortality in the United States has been steadily declining since 1962, substantially contributing to the increased longevity. Recently, infant death rates fell to a record low of 10.9 per 1,000 live births in 1983; from 11.2 per 1,000 in 1982, and 11.7 per 1,000 in 1981.

The improvement in expectation of life since 1980 has been aided by the decline in mortality from the major cardiovascular diseases and from accidents, as well as the absence of severe outbreaks of influenza.

From childhood to later years, life expectancy was, for the most part, unchanged from that in 1982. Among males aged 25 and 45, average remaining lifetime in 1983 was 47.9 years and 29.6 years, respectively—exactly the same as in 1982. At age 65, expectation of life in 1983 was 14.5 years, while in 1982 it was 14.4 years.

Among women, in 1983 the number of additional years of life that could be anticipated at ages 25, 45, and 65—namely 54.6, 35.5, and 18.8 years, respectively—did not increase from that recorded in 1982.

Trends in Life Expectancy by Age

The slight increases in life expectancy at birth in recent years do not compare with the rapid gains during the first half of the century. For example, between 1900-02 and 1949-51, expectation of life at birth rose by 18.9 years for both sexes, 17.6 years for boys and 20.3 years for girls. Since 1949-51 the number of additional years of life expected at birth increased by 6.5 years for the total population, 5.4 years for infant males and 7.3 years for newborn females.

However, at ages 35, 45, and 65 the increases in expectation of life since 1949-51 were relatively greater than those in the previous 50 years. Among males aged 35, the average future lifetime in 1983 was 38.7 years, representing a rise of 3.5 years since 1949-51 or an average of about 0.1 year annually. By comparison, between 1900-02 and 1949-51, longevity rose by 4.0 years or an annual average of 0.08 years. The disparity widened with increasing age so that at age 65, the total gain in life expectancy was 1.2 years in the first half of the century compared with 1.7 years thereafter.

"As fewer young people die from disease-related causes, mortality from the violent causes become a much larger proportion of all deaths."

Among females the same pattern exists. Thus, at age 35 longevity rose by 6.9 years between 1900-02 and 1949-51, and by 5.4 years in the 33 years hence. At age 45 the increments were 5.2 years and 4.9 years, respectively. The absolute gain in future lifetime at age 65 was 3.8 years since 1949-51 and just 2.8 years between 1900-02 and 1949-51. Table 1 presents the expectation of life values by sex and age for the United States

Table 1—Expectation of Life (in years)

United States, by Sex, 1900-02 to 1983

Age	1900-02	1949-51	1959-61	1969-71	1980	1981*	1982*	1983*
0	49.2	68.1	69.9	70.7	73.7	74.1	74.5	74.6
1	55.2	69.2	70.7	71.2	73.7	74.0	74.3	74.5
25	39.1	46.6	47.9	48.4	50.7	50.9	51.3	51.3
35	31.9	37.3	38.5	39.1	41.3	41.6	41.9	41.9
45	24.8	28.5	29.5	30.1	32.1	32.4	32.6	32.6
65	11.9	13.8	14.4	15.0	16.4	16.7	16.8	16.8
0	47.9	65.5	66.8	67.0	70.0	70.3	70.8	71.0
1	54.4	66.7	67.8	67.6	70.0	70.2	70.7	70.8
25	38.4	44.4	45.2	45.1	47.3	47.5	47.9	48.0
35	31.2	35.2	35.9	36.0	38.1	38.3	38.6	38.7
45	24.1	26.6	27.1	27.2	29.1	29.3	29.6	29.6
65	11.5	12.7	13.0	13.0	14.1	14.3	14.4	14.5
0	50.7	71.0	73.2	74.6	77.5	77.9	78.2	78.3
1	56.1	71.8	73.9	75.0	77.4	77.7	78.0	78.0
25	39.9	49.0	50.8	51.8	54.0	54.3	54.6	54.6
35	32.7	39.6	41.3	42.3	44.4	44.7	44.9	44.9
45	25.4	30.6	32.1	33.1	35.0	35.3	35.5	35.5
65	12.2	15.0	15.8	16.8	18.3	18.7	18.8	18.8

Source: 1900-02 to 1982, from the National Center for Health Statistics; 1983 computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company.

*Preliminary

population in selected periods between 1900-02 and 1983.

Life Expectancy Reflects Progress

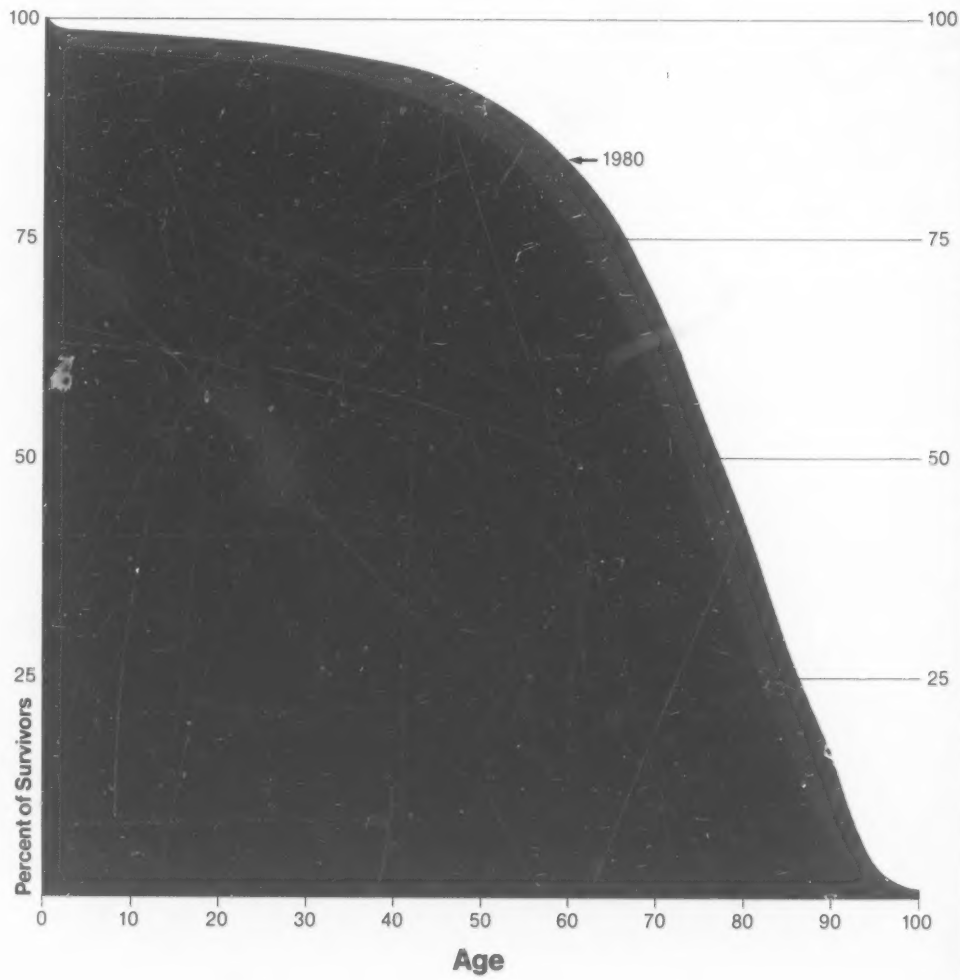
The more favorable life expectancy now enjoyed by Americans reflects the marked rise since the turn of the century in living standards, sanitation and public health administration as well as extraordinary advances in medical science. It was only a few generations ago that infectious diseases took a heavy toll of life in infancy and early childhood, and occasionally flared to epidemic proportions.

The accompanying figure shows the number of survivors from birth to successive ages in 1900-02, 1949-51, and 1980. As may be seen, in 1900-02 about one-fifth of the children died before reaching their 10th birthday, and before reaching 25 years one-fourth were dead from various causes. One-half of the babies born during this period were expected to die by the time they reached age 58 and three-fourths by age 74. Women fared slightly better than men in their survivorship.

By midcentury (1949-51) tremendous improvements in survival had been made. It was not until reaching age 61 that a cohort of newborns

Survivors From Birth To Successive Ages

Total Population, United States, 1900-02, 1949-51, and 1980



Source of basic data: National Center for Health Statistics, United States Life Tables.

was reduced by one-fourth. Further, half of these infants were expected to live to celebrate their 73d birthday and one-fourth were likely to reach 82. After 1949-51 improvement gradually continued. By 1980 three-fourths of the newborn could expect to survive to age 66, one-half to age 77 and one-fourth to age 86.

Violent Deaths on Rise as Diseases Decline

The figure also shows that with the passage of time the survival curve has been progressively taking on a rectangular shape. This is a reflection of the medical and public health improvements made since the turn of the century, which reduced the mortality toll from the communicable, infectious, and chronic diseases and resulted in more Americans surviving to advanced age. As fewer young people have died from disease-related causes of death, the mortality toll from the violent causes of death (accidents, homicides and suicides) have become a much larger proportion of all deaths.

"Expectation of life at birth was considerably greater for whites than for people of all other races."

In 1980, for example, among people under age 45, 43 percent of all deaths were due to violent causes. During 1950 these causes were responsible for 21 percent of the deaths at ages under 45, while in 1900-02 the relative number was just 6 percent. Whether the appearance of the survival curve will continue to rectangularize or significant future changes in prevention, treatment, or management of the chronic diseases will occur and alter the curve's slope is a matter of conjecture.* At any rate, it is clear that our population is becoming older and it is essential to start planning now for the future implications.

*Schneider EL, Brody JA. Aging, Natural Death, and the Compression of Morbidity: Another View. *New England Journal of Medicine*. 309:14, 854-856, Oct. 6, 1983.

Detailed information on life expectancy and mortality in the United States during 1980 (the latest available) is presented in Table 2. As may be observed, expectation of life at birth was considerably greater for whites than for people of all other races. On the average, white males could expect to live 5.4 years longer than their nonwhite counterparts. Among females, the disparity in favor of whites was 4.5 years.

Females Outlive Males

Females continue to have a significant longevity advantage over males. In 1980 the sex differential at birth was 7.4 years among whites and 8.3 years for persons of all other races. At age 25, white females could expect to outlive white males by 6.7 years, with the corresponding figure among nonwhites being 7.6 years. With advance in age, the differential between the sexes diminished, but was still significant. Thus, at age 45, the sex differential in longevity among whites was 6.0 years and at age 65 it was 4.3 years. Among persons of all other races, the female longevity advantage was 6.1 years at age 45, and 3.8 years at age 65.

A comparison of expectation of life values among males reveals that longevity was more favorable for white men until age 71; thereafter, nonwhite men could expect to live as long or longer. Among females, the average length of life was higher for whites until age 75; then the reverse was true.

The second section of the table shows mortality rates (from which expectation of life figures were calculated). Not surprising, mortality rates for whites remained lower than for nonwhites until age 78 for males, and age 84 for females.

Death rates were less than 1 per 1,000 population at ages 1-35 among white females and at ages 2-22 among females of all other races. For males, mortality rates of this magnitude only existed at ages 2-14 for whites and at ages 3-15 for nonwhites. Death rates remained below 5 per 1,000 through age 46 for white males and age 53 for white females; among nonwhites, rates of this low level only prevailed through age 36 for males and 45 for females.

Table 2—Expectation of Life and Mortality Rate at Single Years of Age

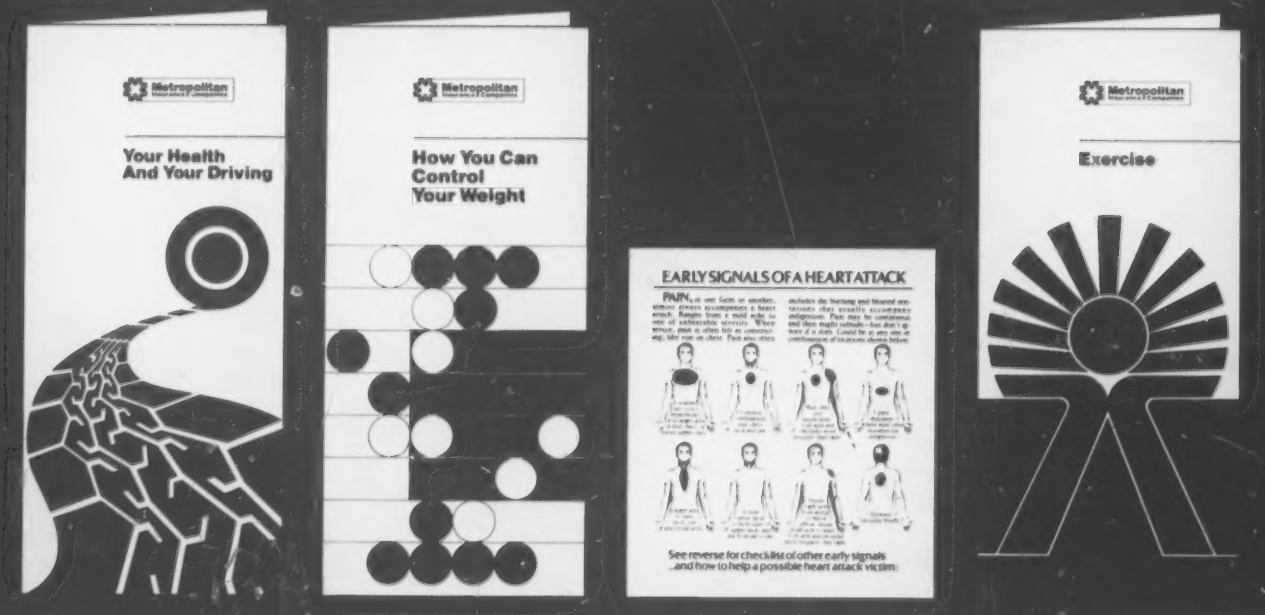
By Race and Sex, United States, 1980

Age	Expectation of Life in Years					Mortality Rate per 1,000				
	Total Persons	White		All Other		Total Persons	White		All Other	
		Male	Female	Male	Female		Male	Female	Male	Female
0	73.7	70.7	78.1	65.3	73.6	12.7	12.3	9.7	20.9	17.6
1	73.7	70.6	77.9	65.7	73.9	.9	1.0	.6	1.3	1.0
2	72.7	69.6	76.9	64.7	73.0	.7	.7	.5	1.1	.8
3	71.8	68.7	76.0	63.8	72.1	.5	.5	.4	.9	.9
4	70.8	67.7	75.0	62.9	71.1	.4	.4	.4	.7	.6
5	69.8	66.8	74.0	61.9	70.2	.4	.4	.3	.6	.5
6	68.9	65.8	73.1	60.9	69.2	.3	.4	.3	.5	.4
7	67.9	64.8	72.1	60.0	68.2	.3	.3	.2	.5	.3
8	66.9	63.8	71.1	59.0	67.2	.3	.3	.2	.4	.3
9	65.9	62.8	70.1	58.0	66.3	.2	.2	.2	.3	.2
10	64.9	61.9	69.1	57.1	65.3	.2	.2	.2	.3	.2
11	64.0	60.9	68.1	56.1	64.3	.2	.2	.2	.3	.3
12	63.0	59.9	67.1	55.1	63.3	.3	.3	.2	.4	.3
13	62.0	58.9	66.2	54.1	62.3	.4	.5	.3	.5	.3
14	61.0	57.9	65.2	53.1	61.3	.5	.7	.3	.7	.3
15	60.0	57.0	64.2	52.2	60.4	.7	1.0	.4	.9	.4
16	59.1	56.0	63.2	51.2	59.4	.9	1.3	.5	1.1	.4
17	58.1	55.1	62.3	50.3	58.4	1.0	1.5	.6	1.3	.5
18	57.2	54.2	61.3	49.3	57.4	1.1	1.7	.6	1.6	.6
19	56.3	53.3	60.3	48.4	56.5	1.2	1.7	.6	1.9	.6
20	55.3	52.4	59.4	47.5	55.5	1.3	1.8	.6	2.3	.7
21	54.4	51.5	58.4	46.6	54.5	1.3	1.9	.6	2.6	.8
22	53.5	50.5	57.4	45.7	53.6	1.4	2.0	.6	2.9	.9
23	52.5	49.6	56.5	44.9	52.6	1.4	2.0	.6	3.0	1.0
24	51.6	48.7	55.5	44.0	51.7	1.4	1.9	.6	3.1	1.0
25	50.7	47.8	54.5	43.1	50.7	1.3	1.8	.6	3.2	1.1
26	49.7	46.9	53.6	42.3	49.8	1.3	1.8	.6	3.2	1.2
27	48.8	46.0	52.6	41.4	48.8	1.3	1.7	.6	3.3	1.2
28	47.9	45.1	51.6	40.5	47.9	1.3	1.7	.6	3.4	1.3
29	46.9	44.2	50.6	39.7	47.0	1.3	1.7	.6	3.5	1.3
30	46.0	43.2	49.7	38.8	46.0	1.3	1.7	.6	3.6	1.4
31	45.1	42.3	48.7	38.0	45.1	1.4	1.6	.7	3.7	1.4
32	44.1	41.4	47.7	37.1	44.2	1.4	1.7	.7	3.9	1.5
33	43.2	40.4	46.8	36.2	43.2	1.4	1.7	.8	4.1	1.6
34	42.2	39.5	45.8	35.4	42.3	1.5	1.8	.8	4.3	1.7
35	41.3	38.6	44.9	34.5	41.4	1.6	1.8	.9	4.5	1.9
36	40.4	37.6	43.9	33.7	40.4	1.7	1.9	1.0	4.7	2.0
37	39.4	36.7	42.9	32.8	39.5	1.8	2.1	1.1	5.0	2.2
38	38.5	35.8	42.0	32.0	38.6	2.0	2.2	1.2	5.3	2.4
39	37.6	34.9	41.0	31.2	37.7	2.1	2.4	1.3	5.6	2.7

40	36.7	34.0	40.1	30.3	36.8	2.3	2.6	1.4	6.0	3.0
41	35.7	33.0	39.1	29.5	35.9	2.5	2.8	1.6	6.4	3.3
42	34.8	32.1	38.2	28.7	35.0	2.8	3.1	1.7	6.9	3.6
43	33.9	31.2	37.3	27.9	34.2	3.0	3.4	1.9	7.5	4.0
44	33.0	30.3	36.3	27.1	33.3	3.4	3.8	2.1	8.1	4.3
45	32.1	29.4	35.4	26.3	32.4	3.7	4.2	2.3	8.8	4.7
46	31.3	28.6	34.5	25.6	31.6	4.0	4.6	2.6	9.6	5.1
47	30.4	27.7	33.6	24.8	30.7	4.4	5.2	2.8	10.4	5.6
48	29.5	26.8	32.7	24.1	29.9	4.9	5.7	3.1	11.4	6.0
49	28.7	26.0	31.8	23.3	29.1	5.4	6.4	3.4	12.4	6.5
50	27.8	25.2	30.9	22.6	28.3	5.9	7.1	3.8	13.4	7.0
51	27.0	24.3	30.0	21.9	27.5	6.5	7.8	4.1	14.5	7.6
52	26.1	23.5	29.1	21.2	26.7	7.1	8.6	4.5	15.7	8.2
53	25.3	22.7	28.2	20.6	25.9	7.7	9.5	4.9	16.8	8.8
54	24.5	21.9	27.4	19.9	25.1	8.4	10.4	5.3	18.0	9.5
55	23.7	21.2	26.5	19.3	24.4	9.1	11.4	5.8	19.2	10.2
56	22.9	20.4	25.7	18.6	23.6	9.9	12.4	6.3	20.5	10.9
57	22.2	19.6	24.8	18.0	22.9	10.7	13.6	6.9	21.9	11.7
58	21.4	18.9	24.0	17.4	22.1	11.7	14.9	7.5	23.4	12.7
59	20.6	18.2	23.2	16.8	21.4	12.7	16.3	8.2	25.1	13.6
60	19.9	17.5	22.4	16.2	20.7	13.8	17.8	9.0	26.8	14.7
61	19.2	16.8	21.6	15.7	20.0	15.0	19.3	9.8	28.6	15.9
62	18.5	16.1	20.8	15.1	19.3	16.3	21.1	10.7	30.5	17.0
63	17.8	15.4	20.0	14.6	18.6	17.7	23.1	11.6	32.3	18.1
64	17.1	14.8	19.2	14.0	18.0	19.2	25.2	12.6	34.2	19.2
65	16.4	14.2	18.5	13.5	17.3	20.8	27.5	13.7	36.2	20.4
66	15.7	13.6	17.7	13.0	16.7	22.4	30.0	14.9	38.3	21.6
67	15.1	13.0	17.0	12.5	16.0	24.3	32.6	16.2	40.6	23.2
68	14.4	12.4	16.2	12.0	15.4	26.3	35.4	17.7	43.1	25.1
69	13.8	11.8	15.5	11.5	14.8	28.5	38.5	19.4	45.8	27.4
70	13.2	11.3	14.8	11.1	14.2	30.9	41.8	21.2	48.7	29.9
71	12.6	10.7	14.1	10.6	13.6	33.5	45.4	23.2	51.7	32.5
72	12.0	10.2	13.5	10.2	13.0	36.3	49.1	25.4	54.9	35.1
73	11.5	9.7	12.8	9.7	12.5	39.2	53.1	27.9	58.1	37.5
74	10.9	9.3	12.2	9.3	12.0	42.3	57.4	30.7	61.5	39.8
75	10.4	8.8	11.5	8.9	11.4	45.7	61.9	33.7	65.0	42.2
76	9.9	8.3	10.9	8.5	10.9	45.5	66.9	37.2	68.8	45.0
77	9.3	7.9	10.3	8.1	10.4	53.6	72.2	41.0	73.1	48.1
78	8.9	7.5	9.7	7.7	9.9	58.2	78.1	45.2	77.9	51.9
79	8.4	7.1	9.2	7.3	9.4	63.3	84.5	50.0	83.3	56.2
80	7.9	6.7	8.6	6.9	9.0	69.0	91.5	55.6	89.4	61.1
81	7.5	6.3	8.1	6.5	8.5	75.5	99.2	61.9	96.2	66.7
82	7.0	6.0	7.6	6.2	8.1	82.9	107.5	69.4	103.9	73.0
83	6.6	5.6	7.1	5.8	7.7	91.4	116.6	78.2	112.6	79.9
84	6.2	5.3	6.7	5.5	7.3	101.3	126.4	88.9	122.4	87.6
85	5.9	5.0	6.3	5.3	7.0					

Source: National Center for Health Statistics

Topical Health and Safety Education Materials Available from Metropolitan


Metropolitan
Your Health And Your Driving
Metropolitan
How You Can Control Your Weight
EARLY SIGNALS OF A HEART ATTACK
PAIN, in one form or another, almost always accompanies a heart attack. Ranges from a mild ache to one of unbearable severity. Where serious, pain is often felt as constricting, like iron on chest. Pain also often
See reverse for checklist of other early signals ...and how to help a possible heart attack victim
Metropolitan
Exercise

Your Health and Your Driving. How mental and physical health affect driving skills. Ways to avoid potential dangers —alcohol, medication, stress, vision problems.

How You Can Control Your Weight. Effective ways to lose weight safely and maintain the loss. Specific nutrition information plus the new 1983 Metropolitan Height and Weight Tables.

Early Signals of a Heart Attack. Describes what could be the early signals of a heart attack. Tells what to do quickly to help a heart attack victim.

Exercise. Benefits of various types of exercise. Tips on relaxation techniques plus examples of several exercises to be done at the office or at home.

For complete descriptions of these and other health promotion materials plus prices and ordering information, write for a free catalog: Health and Safety Education Division, Area 16-UV, Metropolitan Life Insurance Company, One Madison Avenue, New York, N. Y. 10010.

Coming in Future Issues

- Drugs Prescribed in Physicians' Offices for Specific Conditions
- State Population Projections by Age
- Chances of Dying from the Leading Causes of Death
- Mortality from Cirrhosis: Regional Variations
- Geographic Disparities in Growth of School-Age Population: 1980-2000
- Accident Mortality of Infants Under One Year

HISTORICAL PERSPECTIVES

50 YEARS AGO

IN THE **1934** STATISTICAL BULLETIN

Firearms accidents took a heavy toll of life. About 3,000 persons died as the result of careless use of guns. Adult males accounted for around three-fourths of the deaths; children under 15 constituted about one-fifth; and women of all ages made up less than one-tenth of the total. A major contributing factor was the availability of firearms among our (then) large farm population. (Page 3, November)

Half a century of warfare against typhoid fever was reviewed. It was noted that although typhoid fever was one of the first diseases whose bacterial origin was proven, it took a number of years before an effective national program was instituted to combat it. By 1934 the disease was considered a rare cause of death in the more progressive sections of the United States. Moreover, it was felt that modern medicine and sanitary science had conquered typhoid fever, so that its occurrence was considered to be due only to culpable negligence on the part of the locality in which it was found. The history of the disease in Chicago was examined. (Page 1, September)

The Dionne quintuplets were born in Canada, and Metropolitan statisticians reported on the chances of multiple births and the actual experience in the United States and selected countries. In the United States during 1926-1930, there was one pair of twins per 86 confinements, one set of triplets per 8,745 confinements, and one set of quadruplets per 552,000 confinements. There were no quintuplets among the approximately 10 million children born in this period, the probability of this event's occurring was calculated as one set in 57 million confinements. (Currently, the use of fertility drugs has greatly increased the chances of multiple births—ed.) (Page 1, July)

It was hoped that control of tuberculosis was in sight. Since the beginning of the century, the marked decrease in mortality from tuberculosis was hailed as the outstanding achievement of the country's public health program. Recent percentage declines in death rates by states were presented and the significant geographic variations were noted. Despite the gains that were made, tuberculosis was still one of the principal causes of death at the early adult ages. It was urged that the antituberculosis campaign concentrate more of its efforts on this vulnerable age group. (In 1934 the death rate per 100,000 from tuberculosis was 56.7; in 1982 the rate was 0.9—ed.) (Page 6, December)

Increasing automobile use and rising fatality rates were discussed. There were indications that the number of fatalities resulting from automobile accidents would reach a new record—over 34,000. (It did—ed.) Civic agencies and individuals were urged to make concerted efforts to control this increasing hazard. (Page 7, May)

The probability that a child would become an orphan before reaching age 17 decreased significantly (but was still high compared with current experience—ed.). Reduced mortality among parents—especially mothers—was given as the reason. (The period was between 1920 and 1929-31.) Throughout the entire range of the parent's age, the chance of the mother's dying was substantially less than that of the father. It was pointed out that one of the benefits of the mortality improvement was the easing of the heavy child-care burden placed on communities. (Page 7, August)

SB-1 (7-84) Printed in U.S.A.